



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2017-1122; Product Identifier 2012-NE-42-AD; Amendment 39-19385; AD 2018-18-06]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: We are superseding Airworthiness Directive (AD) 2013-02-04 for all Rolls-Royce plc (RR) RB211-Trent 970-84, RB211-Trent 970B-84, RB211-Trent 972-84, RB211-Trent 972B-84, RB211-Trent 977-84, RB211-Trent 977B-84, and RB211-Trent 980-84 turbofan engines. AD 2013-02-04 required on-wing inspections of low-pressure turbine (LPT) disk seal fins and interstage seals when post-flight review indicates Engine Health Monitoring (EHM) vibratory maintenance-alert limits were exceeded in flight. This AD requires additional criteria for the inspection of the stage 2, 3, and 4 LPT disk seal fins and interstage seals and removes the requirement to inspect the stage 5 LPT disk seal fins and interstage seal. This AD was prompted by a Trent 900 engine experiencing increased low-pressure rotor vibration while in flight resulting in an in-flight shutdown (IFSD) and air turnback. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

We must receive any comments on this AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this final rule, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418, or email: http://www.rolls-royce.com/contact/civil_team.jsp. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-1122.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-1122; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations (phone: 800-647-5527) is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued AD 2013-02-04, Amendment 39-17325 (78 FR 6206, January 30, 2013), (“AD 2013-02-04”), for all RR RB211-Trent 970-84, RB211-Trent 970B-84, RB211-Trent 972-84, RB211-Trent 972B-84, RB211-Trent 977-84, RB211-Trent 977B-84, and RB211-Trent 980-84 turbofan engines. AD 2013-02-04 required on-wing inspections of LPT disk seal fins and interstage seals when post-flight review indicates EHM vibratory maintenance-alert limits were exceeded in flight. AD 2013-02-04 also required in-shop inspections of the LPT disk seal fins and interstage seals to detect cracks or damage and, depending on the findings, accomplishment of corrective action. AD 2013-02-04 resulted from a Trent 900 engine experiencing LPT stage 2 disk interstage seal material loss and increased low-pressure rotor (N1) vibration while in flight. We issued AD 2013-02-04 to prevent cracks in the LPT disk, which could result in uncontained engine failure and damage to the airplane.

Actions Since AD 2013-02-04 was Issued

Since we issued AD 2013-02-04, a Trent 900 engine experienced increased N1 vibration while in flight resulting in an IFSD and air turnback. Inspection of the engine revealed LPT damage. A subsequent review of the potential causes determined that engine overhaul shop visit activities could be a factor. RR issued Revision 2 to Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AH054 to introduce an inspection of the LPT disk seal fins and interstage seals after an overhaul shop visit when an engine test (pass-off test) is required due to the work performed. RR also published Revision 3 to Alert NMSB RB.211-72-AH054, dated February 1, 2018, to remove engines that have incorporated the modifications introduced by RR Alert SB RB.211-72-AJ592, dated September 4, 2017, from its applicability. In addition, the European Aviation Safety Agency (EASA) published AD 2018-0126, dated June 11, 2018, to require the changes introduced by Revision 3 of RR Alert NMSB RB.211-72-AH054. We are issuing this AD to address the unsafe condition on these products.

Related Service Information under 1 CFR Part 51

We reviewed RR issued Alert NMSB RB.211-72-AH054, Revision 3, dated February 1, 2018. The Alert NMSB describes procedures for inspection after a pass-off test. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

FAA's Determination

This product has been approved by EASA and is approved for operation in the United States. Pursuant to our bilateral agreement with the European Community, EASA has notified us of the unsafe condition described in the MCAI and service information referenced above. We are issuing this AD because we evaluated all the relevant

information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

AD Requirements

This AD partially retains the requirements of AD 2013-02-04, requires inspection of the LPT disk seal fins and interstage seals following pass-off test, and changes certain inspection requirements.

FAA's Justification and Determination of the Effective Date

No domestic operators use this product. Therefore, we find good cause that notice and opportunity for prior public comment are unnecessary. In addition, for the reason stated above, we find that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments before it becomes effective. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2017-1122 and product identifier 2012-NE-42-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

Costs of Compliance

We estimate that this AD affects 0 engines installed on airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection of LPT disk seal fins and interstage seals	8 work-hours X \$85 per hour = \$680	\$0	\$680	\$0

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2013-02-04, Amendment 39-17325 (78 FR 6206, January 30, 2013), and adding the following new AD:

2018-18-06 **Rolls-Royce plc**: Amendment 39-19385; Docket No. FAA-2017-1122; Product Identifier 2012-NE-42-AD.

(a) Effective Date

This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2013-02-04, Amendment 39-17325 (78 FR 6206, January 30, 2013).

(c) Applicability

This AD applies to all Rolls-Royce plc (RR) RB211-Trent 970-84, RB211-Trent 970B-84, RB211-Trent 972-84, RB211-Trent 972B-84, RB211-Trent 977-84, RB211-Trent 977B-84, and RB211-Trent 980-84 turbofan engines that have not incorporated the modifications introduced by RR Alert Service Bulletin RB.211-72-AJ592, dated September 4, 2017.

(d) Subject

Joint Aircraft System Component (JASC) Code 7350, Turbine Section.

(e) Unsafe Condition

This AD was prompted by a Trent 900 engine experiencing increased low-pressure rotor vibration while in flight resulting in an in-flight shutdown and air turnback. We are issuing this AD to prevent cracks in the low-pressure turbine (LPT) disk. The unsafe condition, if not addressed, could result in uncontained engine failure and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) After the effective date of this AD, after every flight, review the Engine Health Monitoring low-pressure rotor (N1) vibration data within 10 engine flight cycles (FCs).

(i) If you find that the maximum and average vibrations exceed 0.7 inches/sec (ips) and 0.5 ips, respectively, then within 10 engine FCs:

(A) Confirm that the vibration data was not the result of indicator error.

(B) If you cannot show that the vibration increase was caused by indicator error, inspect the LPT stage 2, 3, and 4 disk seal fins and interstage seals in accordance with the Accomplishment Instructions, paragraph 3.B., of RR Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AH054, Revision 3, dated February 1, 2018.

(ii) Reserved.

(2) After the effective date of this AD, each time a pass-off test is performed on an engine after induction into a Repair and Overhaul Shop, inspect the LPT stage 2, 3, and 4 disk seal fins and interstage seals in accordance with the Accomplishment Instructions, paragraph 3.C., of RR Alert NMSB RB.211-72-AH054, Revision 3, dated February 1, 2018.

(4) If, during the inspections required by paragraph (g) of this AD, you find any cracks in the disk seal fins or any interstage seals are missing seal material, replace the parts with parts eligible for installation before further flight.

(h) Credit for Previous Actions

You may take credit for the initial inspections required by paragraph (g)(1) of this AD if, following detection of excessive N1 vibration, you performed the inspections using RR Repeater Technical Variance (TV) 125658, Issue 2, dated August 14, 2012; or RR Repeater TV 125060, Issue 1, dated July 27, 2012, or Issue 2, dated January 30, 2013; or RR Alert NMSB RB.211-72-AH054, Initial issue, dated September 14, 2012; Revision 1, dated November 5, 2012; or Revision 2, dated August 24, 2016.

(i) Definition

For the purpose of this AD, a “pass-off test” is a test on any engine performed in accordance with Task 72-00-00-760-801, General Procedures for Engine Testing, from the Rolls-Royce Trent 970-84 Engine Manual, dated December 1, 2016.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

(2) Refer to European Aviation Safety Agency (EASA) AD 2018-0126, dated June 11, 2018, for more information. You may examine the EASA AD in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2017-1122.

(l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce plc (RR) Alert Non-Modification Service Bulletin RB.211-72-AH054, Revision 3, dated February 1, 2018.

(ii) Reserved.

(3) For RR service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418, or email: http://www.rolls-royce.com/contact/civil_team.jsp.

(4) You may view this service information at FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on August 27, 2018.

Karen M. Grant,
Acting Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.
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